

I claim:

1. An elevator door control system comprising:

an elevator door controller for controlling closure of an elevator door;

a light source array attachable to an elevator car;

5 a light beam receiver array attachable to an elevator car, the light beam receiver array comprising an output to an elevator door controller;

a switch provided in series with the light beam receiver array output to the elevator door controller; and

10 a signal detector disposed on said light beam receiver array to detect a control signal borne by a carrier wave emitted by a transmitter and configured to output a signal to one of a controller and said switch in response to a detected control signal,

wherein, responsive to the signal output by the signal detector, said switch changes from one of a first state and a second state to another of said first state and said second state.

2. An elevator door control system according to claim 1:

15 wherein said second state of said switch causes said elevator door controller to open a closing elevator door or to maintain an open elevator door in an open position.

3. An elevator door control system according to claim 2:

wherein said first state of said switch causes control of said elevator door controller to pass to said light beam receiver array;

20 4. An elevator door control system according to claim 3:

wherein said elevator door controller comprises at least one of a programmable logic controller, an elevator door operator input device, a power supply relay, an elevator control relay, and a synching relay.

5. An elevator door control system according to claim 4:
wherein said elevator door controller comprises a power supply relay,
wherein said switch comprises a solid state relay,
wherein said first state of said switch corresponds to a closed position of said solid state

5 relay,

wherein said second state of said switch corresponds to an open position of said solid
state relay, and

wherein said open position of said solid state relay drops the power supply relay.

6. An elevator door control system according to claim 5:

10 wherein said light beam receiver array comprises a plurality of light detecting
photodiodes and a light beam receiver array switch operatively associated with said light beam
receiver array output to said elevator door controller,

wherein said light beam receiver array switch assumes a first state when each of said light
beam receiver array light detecting photodiodes provides an output signal representative of an

15 incident light beam,

wherein said light beam receiver array switch assumes a second state when any one of
said plurality of light beam receiver array light detecting photodiodes does not provide an output
signal representative of an incident light beam, and

20 wherein said second state of said light beam receiver array switch drops the power supply
relay.

7. An elevator door control system according to claim 6:

wherein said switch is configured to be reset to said first state from said second state
when said light beam receiver array switch assumes said second state.

8. An elevator door control system according to claim 1:

wherein said switch is configured to be reset to said first state from said second state only upon detection by said signal detector of another control signal borne by a carrier wave emitted by said transmitter.

5 9. An elevator light screen signal detector module comprising:

a first electrical connector;

a second electrical connector;

at least one signal detection element configured to detect a carrier wave bearing a control signal and configured to output a signal in response thereto, and

10 a switch configured to change from one of a first state and a second state to another of said first state and said second state in response to a signal output by said at least one signal detection element or in response to a control signal from a controller receiving said signal output by said at least one signal detection element,

wherein said first electrical connector is configured to permit electrical connection of said
15 light screen signal detector module to an output of a light screen receiver array,

wherein said second electrical connector is configured to permit electrical connection of said light screen signal detector module to an input of an elevator door controller, and

wherein connection of said first electrical connector of said light screen signal detector module to an output of a light screen receiver array and connection of said second electrical
20 connector of said light screen signal detector module to an input of an elevator door controller places said switch in series with said output of a light screen receiver array.

10. An elevator light screen signal detector module according to claim 9:

wherein said second state of said switch opens an electrical connection between said output of said light screen receiver array and an elevator door controller, causing the elevator door controller receiving an output signal from said output of said light screen receiver array to open a closing elevator door or to maintain an open elevator door in an open position.

5 11. An elevator light screen signal detector module according to claim 10:

wherein said first state of said switch provides electrical continuity between said output of said light screen receiver array and an elevator door controller permitting a light beam receiver array to which said light screen signal detector module is attached to control the elevator door controller.

10 12. An elevator light screen signal detector module according to claim 11:

wherein said switch comprises a solid state relay,

wherein said first state of said switch corresponds to a closed position of said solid state relay,

15 wherein said second state of said switch corresponds to an open position of said solid state relay.

13. An elevator light screen signal detector module according to claim 12:

wherein said switch is configured to be reset to said first state from said second state by a signal output from said output of said light screen receiver array.

14. An elevator light screen signal detector module according to claim 13:

20 wherein said controller is a processor adapted to execute an instruction set which processes an output from said at least one signal detection element and, in response to said control signal detected by said signal detection element, issues a control signal to said switch to

change from one of a first state and a second state to another of said first state and said second state.

15. An elevator light screen signal detector module according to claim 14, further comprising:

5 an indicating element comprising at least one of an optical and an audible indicating device,

wherein said processor is adapted to execute an instruction set which processes an output from said at least one signal detection element and, in response to said control signal detected by said signal detection element, issues a control signal to said at least one of an optical and an
10 audible indicating device to change state from a deactivated state to an activated state to provide an indication of control signal receipt by the at least one signal detection element.

16. An elevator light screen signal detector module according to claim 15:
wherein said latching element comprises a solid state relay, and
wherein said indicating element comprises a LED element.

15 17. An elevator door light screen receiver array comprising:
a plurality of light detecting photodiodes, each of the photodiodes being configured to provide an output signal in response to an incident light beam;

a light beam receiver array switch, said switch configured to assume a first state when each of said plurality of detecting photodiodes provides an output signal and configured to
20 assume a second state when any one of said plurality of light detecting photodiodes does not provide said output signal,

a switch provided in series with the light beam receiver array switch;

an output electrical connector connected to an output of at least one of said light beam receiver array switch and said switch, said output electrical connector being configured for electrical connection to an elevator door controller for controlling closure of an elevator door;

a signal detector integrated with said light beam receiver array, said signal detector being configured to output a signal in response to a detected control signal borne by a carrier wave to change a state of said switch from one of a first state and a second state to another of said first state and said second state.

18. An elevator door light screen receiver array according to claim 17:

wherein said second state of said switch opens an electrical connection between an elevator door controller and one of said switch and said light screen receiver array causing the elevator door controller to open a closing elevator door or to maintain an open elevator door in an open position.

19. An elevator door light screen receiver array according to claim 18:

wherein said first state of said switch provides electrical continuity between an elevator door controller and said light screen receiver array causing the elevator door controller to permit said light screen receiver array to control closure of an elevator door.

20. An elevator door light screen receiver array according to claim 19:

wherein said switch comprises a solid state relay,

wherein said first state of said switch corresponds to a closed position of said solid state

relay,

wherein said second state of said switch corresponds to an open position of said solid state relay.

21. An elevator door light screen receiver array according to claim 20:

wherein said switch is configured to be reset to said first state from said second state when said light beam receiver array switch assumes said second state.

22. A method of controlling closure of an elevator door comprising the steps of:

emitting a first carrier wave bearing a first control signal from a transmitter,

5 using said first control signal to energize a switch to perform at least one of a temporary enabling and disabling of an elevator door controller, the energization of said switch causing said elevator door controller drive an elevator door toward an open position or to maintain an elevator door in an open position;

emitting a second carrier wave bearing a second control signal from a transmitter, and

10 using said second control signal to deenergize said switch to perform at least one of a temporary disabling and enabling of said elevator door controller, the energization of said switch causing said elevator door controller to drive said elevator door toward a closed position.

23. A method of controlling closure of an elevator door comprising the steps of:

emitting a carrier wave bearing a control signal from a transmitter,

15 using said control signal to energize a switch provided in series to an output of a 2D light screen, the energization of said switch performing at least one of a temporary enabling and disabling of an elevator door controller and causing said elevator door controller drive an elevator door toward an open position or to maintain an elevator door in an open position;

using an output from a 2D light screen to deenergize said switch and correspondingly

20 provide said output of said 2D light screen as a control input to said control said elevator door controller.

24. A method of controlling closure of an elevator door comprising the steps of:

emitting a carrier wave bearing a control signal from a transmitter,

using said control signal to deenergize a switch provided in series to an output of a 2D light screen, the deenergization of said switch performing at least one of a temporary enabling and disabling of an elevator door controller and causing said elevator door controller drive an elevator door toward an open position or to maintain an elevator door in an open position;

5 using an output from a 2D light screen to energize said switch and correspondingly provide said output of said 2D light screen as a control input to said control said elevator door controller.